

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A method of manufacturing a nonvolatile semiconductor storage device, comprising:

a first step of successively forming a first insulating film and a first polysilicon layer on a semiconductor substrate, and implanting nitrogen ions into a front surface of the first polysilicon layer;

a second step of patterning the first polysilicon layer and the first insulating film into the shape of a band;

a third step of thermally oxidizing the patterned band-shaped first polysilicon layer, thereby to form a second insulating film which is thicker at side surfaces of the first polysilicon layer than at the front surface thereof;

a fourth step of forming a second polysilicon layer on a front surface of the semiconductor substrate formed with the second insulating film; and

a fifth step of performing patterning so as to form each storage element of the nonvolatile semiconductor storage device as including the first insulating film, a floating gate electrode made of the first polysilicon layer, the second insulating film, and a control gate electrode made of the second polysilicon layer,

wherein the nitrogen ions are implanted into the first polysilicon layer so as to be located only in the front surface of the first polysilicon layer.

Claim 2-5 (Canceled)

Claim 6 (Previously Presented): The method of manufacturing a nonvolatile semiconductor storage device of claim 1, wherein the first polysilicon layer has a thickness of 20 to 50 nm, and the nitrogen ions are implanted with an acceleration voltage of 5 to 10 keV and a dose of 1×10^{19} to 5×10^{20} ions/cm².

Claims 7-8 (Canceled)

Claim 9 (Currently Amended): A method of manufacturing a semiconductor device comprising:

forming a first insulating film and a first polysilicon layer in sequence on a semiconductor substrate;

implanting nitrogen ions into a front surface of the first polysilicon layer;

patterning the first insulating film and the first polysilicon layer to form a band-shaped segment thereof on the semiconductor substrate;

thermally oxidizing the band-shaped segment to simultaneously grow a second insulating film on side surfaces and the front surface of the first polysilicon layer, wherein the second insulating film is grown thicker on the side surfaces of the first polysilicon layer than on the front surface of the polysilicon layer implanted with nitrogen ions; and

forming a second polysilicon layer on a front surface of the thermally oxidized band-shaped segment,

wherein said implanting nitrogen ions is performed prior to said patterning the first insulating film and the first polysilicon layer, and wherein the nitrogen ions are implanted into the first polysilicon layer so as to be located only in the front surface of the first polysilicon layer.

Claim 10 (Previously Presented): The method of manufacturing a semiconductor device of claim 9, further comprising:

patterning the thermally oxidized band-shaped segment having the second polysilicon layer thereon, to form a non-volatile semiconductor storage element including the first insulating film, a floating gate electrode made of the first polysilicon layer, the second insulating film, and a control electrode made of the second polysilicon layer.

Claims 11-13 (Canceled)

Claim 14 (Previously Presented): The method of manufacturing a semiconductor device of claim 9, wherein the first polysilicon layer has a thickness of 20 to 50 nm, and the nitrogen ions are implanted with an acceleration voltage of 5 to 10 keV and a dose of 1×10^{19} to 5×10^{20} ions/cm².